DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Response to Amendment

3. This communication is responsive to the applicant's amendment filed on 08/31/2009 and RCE filed on 11/30/2009. The applicant(s) amended claims 1 and 17 (see the amendment: pages 2-3).

Response to Arguments

4. Applicant's arguments filed on 08/31/2009 with respect to the claim rejection under 35 USC 103, have been fully considered but are moot in view of the new ground(s) of rejection, since the amended claims introduce new issue and/or new ground, which change the scope of the claims.

It is noted that the previous cited references are still applicable to the amended claims for the corresponding claim rejection (may include newly combined teachings and/or interpretations) with new ground (see detail below).

It is also noted that the response to the applicant's arguments based on the newly amended claims (see Remarks: pages 5-9) is directed to the claim rejection with the new ground (see below). Regarding combining prior art teachings including the newly amended limitation, it is noted that, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). Further, it is noted that the examiner's arguments in section of "Response to Argument" of the previous final office action (filed on 06/29/2009) are still applicable to the newly amended claims, with newly combined prior art teachings and/or interpretations (see below).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-8 and 17-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1 and 17, the newly amended limitation "collecting a plurality of utterance **independent of any call type**" introduces new subject matter, which is not specifically described in the original specification. The applicant failed to provide reference(s) in the original specification to show where the newly amended limitation came from and nowhere in the specification can be found for specifically describing/supporting the newly amended limitation.

Regarding claims 2-8 and 18-20, the rejection is based on the same reason described for claims 1 and 17, because the dependent claims inherit the same problematic limitation(s) of its parent claims.

Claim Rejections - 35 USC § 103

6. Claims 1-3, 5-6, 8-11, 13-14 and 16-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI (US 6,173,261) in view of ATTWATER et al. (US 6,839,671) hereinafter referenced as ATTWATER.

As per **claim 1,** as best understood in view of the claim rejection under 35 USC 112 1st (see above), ARAI discloses 'grammar fragment acquisition using syntactic and semantic clustering' (title) 'for recognizing and understanding fluently spoken languages' (abstract), comprising:

"collecting a plurality of utterances independent of any call type" (Fig. 9 and col. 9, lines 1-8, 'database (collection) of a large number of utterances (collected plurality of utterances)',

wherein the claimed "utterances independent of any call type" are interpreted as or read on the collected utterances before classification or clustering);

"generating a plurality of call types, each generated call type being based on a first set of utterances selected from the collected plurality of utterances", (col. 2, lines 13-35, 'clustering phrases into grammar fragments' that are associated to the utterances, 'generate a collection of grammar fragments each representing a set of syntactically and semantically similar phrases' and used to 'determine a call classification (a call type)'; Fig. 9 and col. 9, line 1 to col. 10, line 45, 'a set of candidate phrases (including call types) having a probabilistic relationship with one or more of the set of predetermined routing objectives with which the input speech utterances are associated', 'call-type classification (generating call types)'; Fig. 2, also showing call types having/associating the training transcriptions (corresponding to the first set of utterances); also see the examiner's arguments stated in the above section of "Response to Arguments");

"generating a first natural language understanding model using call type information contained within said first set of utterances"(col. 2, lines 6-9 and 20-35, 'to utilize these grammar fragments (associating corresponding utterances) in language models (interpreted as natural language understanding models) for both speech recognition and understanding', 'salient sequences of these fragments may then be automatically acquired, which are then exploited by a spoken understanding module to determine a call classification'; Figs. 11a-11c and col.10, lines 30-45, 'as a consequence of this expansion, a fully expanded salient fragment network (also corresponding to the first natural language understanding model) is obtained (generated)');

"testing said first natural language understanding model" (col. 9, lines 61-67, 'recognition language model (natural language understanding model)', 'the training transcription contained

7,800 sentences while the test transcription contained 1000 sentences', which implies testing the language model);

Even though ARAI discloses that the grammar fragments formed from candidates phrases that generated from the training transcription (based on the testing) can be sorted based on call types (col. 6, lines 39-53), ARAI does not expressly disclose "**modifying** said plurality of call types based on said testing" and "**generating a second** natural language understanding model using said modified plurality of call types". However, the feature is well known in the art as evidenced by ATTWATER who discloses 'learning of dialogue states and language model of spoken information system' (title) for creating 'a dialog model' using a training corpus of example human-human dialogues (abstract), comprising 'a natural language call steering system' in that 'the received speech utterance is analysed by the recognizer with reference to a language model' and using 'semantic model to form a semantic classification' that provides classifiers according to a predefined set of meanings (corresponding to call types) (col. 3, line 60 to col. 4, line 14), and teaches that 'the sentences in supervised training corpus 42 are clustered using clustering algorithm' and 'clusters thus generated are manually checked' in which the words/phrases can be deleted or substituted (modified) in forming a cluster (col. 6, lines 1-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that supervised training with manually checked clusters would provide capability of modifying the clusters/classes for the transcribed data so as to form a different language model, and to modify ARAI by combining the feature of using a candidate set of grammar fragments associating the clustered call-types in the training transcription disclosed by ARAI (col. 3, lines 1-60) and the feature of using supervised training and/or manually checking

(or transcribing) clusters with modifying capabilities, such as deleting or substituting, as taught by ATTWATER (col. 6, lines 1-22), so that the call type of the candidate fragments associating the utterances/transcription can be manually modified and another fully expanded salient fragment network (second natural language understanding model) can be generated, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22).

As per **claim 2** (depending on claim 1), ARAI in view of ATTWATER further discloses "generating an annotation guide using a second set of utterances which is a subset of said first set of utterances" (ATTWATER: Fig. 3 and col. 5, lines 13-14, 'nodes… have been annotated with operator utterance'; col. 11, lines 33-35, 'each call in the corpus can be annotated according to the cluster of each operator utterance in the call', wherein the content of labels 26 in Fig.3, such as 'greeting', can be reasonably interpreted as generated annotation guide as claimed; ARAI: Fig.11C also suggests that the utterances corresponding to phrase 'collect call' (or 'collect phone call') is a subset of the utterances of the consequence expansion (the model), so that it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings from ARAI and ATTWATER by providing generated annotation (annotation guide) using a subset of utterances of the consequence expansion, for the purpose (motivation) of generating more accurate transcriptions and/or improving call-type classification performance for the system (ATTWATER: col. 6, lines 30-31; ARAI: col. 10, lines 21-22)).

As per **claim 3** (depending on claim 1), ARAI in view of ATTWATER further discloses "generating call type data using at least **one of** data clustering, relevance feedback, string

searching, data mining, and active learning tools" (ARAI: Fig. 9, 'grammar fragment (data) clustering'; ATTWATER: col. 5, lines 61-65, 'dynamic programming (DP) match (string searching)').

As per **claim 5** (depending on claim 1), ARAI in view of ATTWATER further discloses "said first natural language understanding model is trained using a first text file containing utterances contained within said first set of utterances and a second text file containing call types assigned to said utterances in said first text file" (ARAI: Fig. 9 and col. 9, line 4 to col. 10, line 45, wherein the 'database' with labeled utterances and training transcriptions necessarily include text file/table (first text file) linking (containing) the corresponding utterances, and the phases (text) classified with call types are also necessarily stored in a file or table (second text file) and linked (assigned) to the corresponding utterances; also see Figs. 7A-7C and 11A-11C).

As per **claim 6** (depending on claim 1), ARAI in view of ATTWATER further discloses "said natural language understanding model is tested using a subset of said first set of utterances" (ARAI: Fig. 9, 'test speech utterance' and 'input speech').

As per **claim 8** (depending on claim 1), ARAI in view of ATTWATER further discloses "said first natural language understanding model is created prior to an annotation guide" (ATTWATER: Fig. 3, wherein the content of labels 26, such as 'greeting', is interpreted as generated annotation guide; col. 11, lines 33-35, 'once the sentences in the training database have been clustered …each call in the corpus can be annotated **according to the cluster** of each operator utterance in the call', which suggests the model is created prior to the annotation (guide)).

As per **claims 17-20**, the rejection is based on the same reason described for claims 1-2 and 5-6, because it also reads on the limitations of claims 1-2 and 5-6 respectively.

7. Claims 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over ARAI in view of ATTWATER as applied to claim 1, and further in view of MAES et al. (US 2003/0088421) hereinafter referenced as MAES.

As per **claim 4** (depending on claim 3), even though ARAI in view of ATTWATER discloses generating call types, as stated above, ARAI in view of ATTWATER does not expressly disclose "using a graphical user interface (GUI)." However, the feature is well known in the art as evidenced by MAES who discloses 'application that supports multi-modal', 'conversational applications' utilizing 'NLU (natural language understanding)', 'multi-modal interactive dialog comprises modalities such as speech, visual (GUI)…and a combination of such modalities (e.g. speech and GUI)' (p(paragraph)46); and 'multi-modal browser application comprise a GUI browser' (p73). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify ARAI in view of ATTWATER by combining the feature of generating call types as stated for claims 1 and 3, with feature of supporting multi-modal applications including using GUI, as taught by MAES, for the purpose (motivation) of better disambiguating and understanding the user's intention and/or displaying the related presenting and updating information (MAES: p46, p244).

As per **claim 7** (depending on claim 1), the rejection is based on the same reason described for claim 4, because the claim recites the same or similar limitation(s) as claim 4.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to QI HAN whose telephone number is (571)272-7604. The examiner can normally be reached on M-TH:9:00-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

QH/qh
January 12, 2010
/Qi Han/
Primary Examiner, Art Unit 2626